

The 12th Japan TRIZ Symposium 2016 Abstracts

June 24, 2016 (2nd announcement)

Symposium Executive Committee

EI01 Alexander Kudriavtsev (Practical Invention Center)

(Keynote Lecture)

Difficult Problems and New Horizons

Development of the notion of Difficulty in TRIZ

Alexander Kudriavtsev (Practical Invention Center)

The idea that you need to take difficult inventive problems as contradictions had become one of the fundamental ideas on which TRIZ started to develop. This approach made it possible to create effective heuristics and algorithms of problem solving, i.e. the Classical TRIZ.

Tools of the Classical TRIZ have proved to be very helpful when you work using important methods for production improvement (Lean, 6σ and so on). However, the notion of difficulty in TRIZ has developed further, which demands to build new models for problem solving. For example, difficult problems today are necessities to find new working principles for systems. You come across these problems when it is recognized that the possibilities for further development of known principle of action has been exhausted and you need to create a principally new product.

The presentation shows how the notion of a difficult problem has been developing in TRIZ, what possibilities it opens up and what types of tools have appeared for working in new situations.

E01 Emanuel LELEITO (Nagoya University, Japan)

Using TRIZ to Support Education on Disaster Risk Reduction

Emanuel LELEITO, Kiyohisa NISHIYAMA (Nagoya University, Japan)

Education related to Disaster Risk Reduction (DRR) spans a wide range of disciplines covering topics from the general to the very technical and requiring interdisciplinary collaboration to implement. At the tertiary level where students are already divided and focused on different academic fields, this complicates efforts by educators to design optimal content delivery methods, provide clear and attainable teaching goals, and keep students motivated, engaged and receptive to the whole range of information being provided in a DRR class. This report describes how TRIZ was used to present DRR educational content to a class attended by a multidisciplinary group of students, gives examples of outputs from the TRIZ aided class sessions, and discusses the potential effectiveness of TRIZ as a versatile teaching aid.

J100 Hideaki Kosha (JTS Open Task Subcommittee)

(Tutorial)

Systems Approach

Hideaki Kosha

(JTS Open Task Subcommittee / USIT Manufacturing Technology Support)

An easy-to-understand explanation on “Systems Approach” with simple practices giving a broad perspective from grasping the problem situation to generating solutions, which will be useful even for a beginner in TRIZ

J102 Akira Suzuki (Hokkaido University)

(Special Lecture)

An Example of Useful Science:

Organic Synthesis Organoboron Coupling Reaction

Akira Suzuki (Hokkaido University)

A talk about the importance of the creativity of a researcher / engineer, and the contribution to creation development of industry, etc. through the discovery/application of Suzuki Coupling

J01 Shigeru Hisanaga (DENSO CORPORATION)

In-company TRIZ Education for Carrying to Practice

Shigeru Hisanaga (DENSO CORPORATION)

In our company, introduction of TRIZ started in 2003, and TRIZ practical use has been promoted up to the present. There, the candidate in the company has gone focusing on the practice which aims at solution with the application of TRIZ to actual business with an in-company promoter. In order to spread TRIZ practical use, those who wish to practice TRIZ have to increase in number, and those who know TRIZ before that with a natural thing have to increase in number. Here is the necessity for an "in-company TRIZ education for carrying to practice."

In order to make an engineer in the company know about the existence of TRIZ and charm widely and to lower the hurdle to TRIZ practice, in-company TRIZ education is in a very important positioning. We began "the in-company TRIZ education for carrying to practice" in the form which will be parallel with practice from 2008. This year, the 9th year comes around adding improvement of educational contents, and I have contributed to increasing many TRIZ practitioners until now.

So far, I have performed various trials exploring what to take up out of the huge TRIZ contents and how to teach, what kind of exercise is appropriate, etc. I will report on the improvement process of this "in-company TRIZ education for carrying to practice", which will contribute to reference of the promoters who is going to plan in-company TRIZ educations.

J02 Yoshimoto Ishikawa (HGST Japan)

Managing the Uncertainty of Inventive Problem Solving

Yoshimoto Ishikawa (HGST Japan)

Introduction of TRIZ spreads in some organizations in many cases. In order to spread TRIZ in an organization and to solve an invention problem systematically, positive practical use of TRIZ by a manager is indispensable. The conventional plan of idea generation to an invention problem is making a specialist analyze and making the idea of solution come out with a trial-and-error method. Since uncertainty cannot manage this process highly, the manager himself does not participate in this process. Even if TRIZ is introduced with much trouble, the manager tends to remain not participating in the process of TRIZ as usual. On the other hand, the promoter of the organization who newly introduces TRIZ thinks "easier to deliver than to worry about", and he does the best of his ability for introducing TRIZ into the spot, and the positive practical use process of TRIZ by a future manager does not consider it. For these reasons, the way to positive practical use of TRIZ by a manager does not open.

Then, specialists, such as a consultant, need to present the standard process of the positive practical use process of TRIZ by a manager.

In order for a manager to utilize positively, it is necessary to be the process that certainty manageable by PDCA is high. Managing the process of TRIZ, the certainty of problem solving becomes high. Furthermore, in order to reduce uncertainty, it is effective to combine two or more themes or to combine two or more ideas. It is thought that especially set base development of the Toyota type product development and the combination of TRIZ are effective.

J03 Akihiko Ikeda (Sony Semiconductor Solutions Corporation)

TRIZ Promotion Example in Sony Corporation Semiconductor Group - Introduction Episode, Training, up to the Practice -

Akihiko Ikeda (Sony Semiconductor Solutions Corporation)

Takeki Tanaka, Tsukazaki Hisanobu, Owaki Kouichi

(Sony Semiconductor Manufacturing Corporation)

Prize for an excellent work is also allowed to be awarded many announcements of the Sony persons concerned at the past TRIZ symposium several times. However, the contents of an announcement had the main know-how thing, and promotion activities in the company hardly touched.

So, in this announcement, I will introduce the measure from the TRIZ introduction in the Sony Corp. Semiconductor Group to training and its practical use. As concrete contents, it is the following:

- 1) The history of TRIZ introduction at Sony Semiconductor Solutions (former Sony Corp. Semiconductor Group), and the outline of promotion
- 2) Promotion and practical use in Sony Semiconductor Manufacturing, Inc.

Since 2) especially will be greatly consulted including the thorny introductory process as an example of an introductory success to a company, I would like the direction that I will tackle promotion from now on, and people which are hitting and taking pains over the wall to refer to it by all means.

And I will be pleased, if this presentation serves as a TRIZ introduction in each company, and reference of practical use leading to revitalization of the economy of Japan and also leads to contributing to building a future better society.

J04 Manabu Hayashi (Fuji Xerox Co., Ltd.)

Idea Generation Process by Idea Deployment Matrix using I-TRIZ PF

Manabu Hayashi, Naoya Nobutani, Masafumi Ono (Fuji Xerox Co., Ltd.)

Ideation-TRIZ (I-TRIZ) is a technique excellent in performing the "information grasp in question" by various approaches to a clear subject. The systematic process for making intellectual property value amplify also in intellectual property control (CIP: Control of Intellectual Property) of I-TRIZ which is a solution of the problem about intellectual property, and strengthening protection from patent infringement and detour is prepared.

In the applicable field application activities of new technology, I will set this presentation in the process of this invention strengthening of CIP, and will introduce the practice example of the idea way-of-thinking process of applying an idea deployment matrix using Problem FORMULATOR (PF) which is a problem analytical tool of I-TRIZ.

J05 Toru Nakagawa (Osaka Gakuin University & CrePS Institute)

**TRIZ/CrePS Approach to the Social Problems of Poverty:
Underlying the Arguments by Ordinary People,
'Liberty vs. Love'**

Is Found the Principal Contradiction of the Human Culture

Toru Nakagawa (Osaka Gakuin University & CrePS Institute)

The present paper is the first report of applying the TRIZ and CrePS methodologies to a complex social problem. TRIZ, which was established originally in the fields of technologies, is newly applied to broad social problems, specifically, the poverty problem in the Japanese society.

First, for understanding the problem situations, I selected "The Low-living Elderly" book (by Takanori Fujita, 2015) as the source reference and visualized the logics in the book with the Fuda-Yose Tool (developed by Akihiro Katahira) in the diagrams similar to the Affinity Method diagrams (in a pamphlet of 24 pages). Then I closely examined the 82 customer reviews of the book contributed to the Amazon site. As the results of these surveys, I recognized, underlying the arguments by ordinary people, a fundamental problem related to 'Win-or-Lose and Mutual aid in the Competitive society'. Deeply beneath their arguments, I have found that 'Liberty and Love' are the Principal Guiding Principles of Human Culture and yet 'Liberty vs. Love' is the Principal Contradiction of Human Culture. Both Liberty and Love are contained, motivated, and coordinated by Ethics. In various levels of social systems built by the Human Culture, the relationships among Liberty, Love, and Ethics need to be studied in their current and also desirable models. Such models will guide us to new possible solutions for various social problems including the poverty problem.

J06 Takashi Shikata (JTS Open Task Subcommittee)

Open Task Subcommittee Activity Report

Explanation of the Open Task for this Symposium

Tomohiko Katagiri, Hideaki Kosha, Takashi Shikata, Shigeru Hisanaga,

Ikuo Yoshizawa

(JTS Open Task Subcommittee)

[Educational Research Subcommittee of a New Era (Japan TRIZ Society, NPO)]

Step 1: Introduction of the subcommittee

Step 2: Background and objective of this event

Step 3: Procedure of the event

Step 4: Solving an Open Task (Problem Solving Approach by TRIZ)

Step 5: Explanation of the Open Task and approach

Step 6: Confirmation of the procedure of tomorrow

J07 Hiroyuki Tsuchiya (OLYMPUS Corporation)

**Advance the technology search in rich creativity
by removing our "Psychological inertia" using TRIZ**

- Case study of “Theme search solution” in OLYMPUS 7 Solutions -

**Hiroyuki Tsuchiya, Kazuo Abe, Kazuhiro Fujikawa, Takashi Ogata
(OLYMPUS Corporation)**

Since 2012, OLYMPUS has introduced 7 Solutions based on QFD, TRIZ and Taguchi Method.

Focusing on the function of the system is important for connecting to each method and each solution smoothly.

In this paper, we introduce the technology search methods by using "Desire logic tree" and TRIZ (Indexes of effects and 9-Window Method).

Three years ago, we created "Theme search solution". It has been applied to the various element technology developments. In this period, we got good suggestions from engineers. On repeating to change "theme search solution" with generalization, it has become easy to use.

The key point of "Theme search solution" as follows,

- "Desire logic tree" can easily expand systematically the implementation means and utilization applications, based on core technology.
- Indexes of effects and 9-Window Method of TRIZ broaden horizons by removing our "Psychological inertia".
- Choose theme by matching needs and seeds to product strategy, after you have spread "Desire logic tree".

J08 Kazuo Abe (OLYMPUS Corporation)

TRIZ of “Type of fulfilling the desire” to make ideas based on the function

- Case study of “Making Strong Patent solution”

in OLYMPUS 7 Solutions -

**Kazuo Abe, Hiroyuki Tsuchiya, Kazuhiro Fujikawa, Takashi Ogata
(OLYMPUS Corporation)**

We've been solving the problems to meet the needs of engineers by “7 Solutions” based on QFD, TRIZ, and Taguchi Method. Focusing on the function of the system is important for connecting to each solution smoothly.

In this paper, TRIZ of “Type of fulfilling the desire” is very effective when you create the patent after resolving the problem.

The key point of “Type of fulfilling the desire” as follows,

- Engineers make the idea widely by removing the psychological inertia.
- The problem definition table for “Type of fulfilling the desire” is able to facilitate the use of the invention principles and effects of TRIZ.
- Engineers will be able to create the idea by using a lot of means.

These means are realizing the function, merging the functions, and extending the feature benefit.

J09 Hajime Kasai (IDEA Inc.)

Creation of a New Business by "Reverse Effects (*)"

- Proposal of a New-product-development Method

Based on Technical Seeds -

Hajime Kasai (IDEA Inc.)

Since the incorporation procedures in 2003, our company has supported Japan's manufacturing industry by project consulting so that a quality product may be early developed at a low price combining the systematic techniques, such as QFD and a Taguchi Method, for an axis and making the No.1 product of the world can do TRIZ. Although the author went to the company of the former many as the practice staff and practical problem solving and subject achievement were supported, based on the result, I reported six kinds of practical use methods of TRIZ as the core technique of a solution at the TRIZ symposium in 2013.

And, application to the new product of possession technology from themes, such as "problem solving" which was in use till then at the spot of consulting after the last report, "improvement in performance", and "an excavation of a new method". The deployment to a new field, the excavation of a research-and-development theme, etc. realize that the scope of TRIZ is shifting to the theme on the basis of technical (product) seeds. I analyzed the theme of these new domains in the viewpoint of the aim of product development, and since it collected as a methodology, I will report on it.

(*) Reverse Effects: A word-formation of the writer which means "reclaiming a new use from a function"

J10 Tomohiko Katagiri (IDEA Inc.)

Development of Spinning Tops by TRIZ & TM & Simulation

- Challenge to the All Japan Manufacturing Industry Top Competition

Part 3 -

Team IDEA Tomohiko Katagiri (IDEA Inc.)

Revitalize the Japanese manufacturing industry!

With the slogan above, the "All Japan Manufacturing Industry Top Competition," which started in 2012, is showing a great climax where the battle to which a large adult loads a small top with the soul of his company and technology has called reputation, and a hundred and several tens of spinning top competitions including national ones held at various sites.

Since 2014, titling "Development of Spinning Tops by TRIZ & TM & Simulation", Team IDEA has been introducing problem solving approaches centered on TRIZ, and has also entered the Spinning Tops Competitions with its tops actually developed achieving results such as winning first prize at G3 Shinshu Ueda Site.

In the past presentations, setting "How to approach when facing a new challenge never experienced before?" as the theme, a systematic approach of

- (1) Problem hypostatization [Function-Attribute Analysis]
- (2) Problem hypostatization [Cause-Effect Analysis]
- (3) Challenge extraction and idea generation based on TRIZ
- (4) Taguchi Method [Parameter Design]
- (5) CAE [Motion Analysis].

has been introduced to develop tops entering the Spinning Tops Competitions.

This time, for the 3rd year, I will introduce how to converge the great abundance of ideas which were generated by TRIZ into the last concept and how to make a "winnable spinning top" analyzing the trend of the spinning tops of other teams, which are the measures towards the 4th National Competition held in February, 2017.

J11 Kiyohisa Nishiyama (Nagoya University)

Applying TRIZ to the Internationalization Education at Research University

A Case Study Report by the International Academic Exchange Office at the School of Engineering / Graduate School of Engineering, Nagoya University

Kiyohisa Nishiyama, Emanuel Leleito, Gang Zengh

(School of Engineering / Graduate School of Engineering, Nagoya University)

The International Academic Exchange Office at the School of Engineering / Graduate School of Engineering, Nagoya University (hereinafter, International Academic Exchange Office) is mainly conducting education and research relevant to the problems by globalization of a university focusing on the student of the faculty of technology. The contents go across the English education for the correspondence to a foreign student, a cultural understanding, and a Japanese student, etc. variably. When carrying out the education for an especially different field and the various students that have against the background of culture, the common concept which can cross these is needed. For the student of all the faculties of technology, the authors pay their attention to TRIZ as a useful knowledge, and are carrying out introduction to an educational activity positively beginning in the 2016 fiscal year. In this presentation, I will introduce two examples (practical use of TRIZ in the lecture for the example which introduced technical inconsistency into English paper writing instruction, and various students) which the authors have carried out.

J12 Nagai Tetsuya (MPUF)

Exploring Improvement in Practice Application of USIT

**Nagai Tetsuya (private entry), Mihara Yuji (Creative Technology Institute Co. LTD.),
Tsuyoshi Todome (private entry), Takashi Shikata (KUBOTA Corporation),
HIDEAKI KOSHA (USIT Manufacturing Technology Support)**

USIT has been applied to various subjects as a practice technique of TRIZ. By any technique, the spread requires the guide which can be performed without depending only on experience as much as possible. USIT has many Know-How which are mastered while embezzling to actually use it although TRIZ with a huge system is formulated and it is made intelligible, and for beginners' mastering, I sometimes run against the wall. While we took up improvement of the cap of a PET bottle as an example and inquired using USIT, we were able to clarify some improving points which contribute to Brush up of USIT.

J13 Osamu Ikeda (Society of Japanese Value Engineering)

**Introduction of
"Thinking Way Strengthening VE Utilizing TRIZ /
A Practical Deployment Method of TRIZ in VE"
(From the study group activity result
in the Society of Japanese Value Engineering)**

Osamu Ikeda (Nikon Corporation), Shinji Gomi (Sunrec Co., Ltd.),

Hiroyuki Arai (Hitachi Systems, Ltd.),

Katsumi Ueda (Mitsubishi Heavy Industries, Ltd.),

Tokio Kobayashi (Hitachi Construction Machinery Co., Ltd.),

Kouji Saito (Mind-J), Tetsuro Hattori (TED Value Consulting),

Hirotake Makino (Yokogawa Electric Corporation),

Tatsuo Miyoshi (Mitsubishi Electric Corporation),

Takeshi Nagaoka (ORIENTAL MOTOR Co., Ltd.),

Mitsutoshi Yoshikawa (JEOL Ltd.),

Tetsuya Shibuya (Society of Japanese Value Engineering)

[Thinking Way Strengthening VE Study Group,

East Japan Branch R&D Sectional Meeting, Society of Japanese Value Engineering]

I will report on the result of the sectional meeting activity in the incorporated-association-for-the-public-good Society of Japanese Value Engineering and the East Japan branch. The R&D sectional meeting and the way-of-thinking strengthening VE study group called the practical use TRIZ study group, took up TRIZ, and aimed at applying various techniques including the view, or an Inventive Principle and a Separation Principle simple in VE activity at the beginning of the activity start of the 2003 fiscal year. Then, it developed into an activity aiming at collecting as an enforcement procedure of the "Way-of-thinking strengthening VE" which included the view and the main techniques of TRIZ in the VE enforcement procedure.

This report aims at the introduction of the "Practical deployment method of TRIZ in way-of-thinking strengthening VE/VE which utilized TRIZ" data-sized as a result of the study group. Data consist of the following contents: A study group member and the activity progress in the 2012 to 2013 fiscal year were shown in Chapter 1 and Chapter 2. Chapter 3 described being aimed at the case of 2nd Look VE application as a range of research by these data. In Chapter 4, the enforcement item of research was shown and

took up the helmet for motorbikes as object products of VE. The outline of TRIZ was summarized in Chapter 5, and Chapter 6 explained the practical use method of TRIZ in VE enforcement procedure. The application example over the helmet of the way-of-thinking strengthening VE which utilized TRIZ was shown in Chapter 7.

J14 Kimihiko Hasegawa

(Intellectual Property Creation Research Subcommittee, JTS)

Case Study on Solving Problems by the "best 8" Business Operators

- Taking the Proposal for a New Life Style of the Elderly People as an Example – (Part 3)

Kimihiko Hasegawa, Toshimitsu Kataoka, Narumi Nagase,

Shigeru Suzuki, Hirotugu Ishihara, Sadao Nishii

(Intellectual Property Creation Research Subcommittee, Japan TRIZ Society)

As a result of having tackled the subject of research "the proposal of elderly people's new life style", there is an example of about 200 affairs where I evaluated the degree of elegance((expectation / realization power) x ease of use of resources) about universal design-related existing products and service by last time.

This time, being about the existing products and services of the universal design relation of about 200 affairs to last time, it was guessed whether the operator of about 265 sorts of "operator for solving business problem" throats carried in the software the "knowledge wizard" of Ideation International would be used. As a result, top eight sorts of operators which had much guessed number of cases were specified as "operators with high flexibility" and the eight sorts of "operators with high flexibility" were used to solve 20 sorts of "troubles of elderly people" found by a new questionnaire.

As a result, a solution concept of "mutual-aid system of neighboring society" was proposed to the "troubles of elderly people", it was decided to establish a "communication site" for supporting the intellectual production activities as a proposal of the new life style of elderly people.

J15 Fumiko Kikuchi (Pioneer Corporation)

Search for an Evolutionary Business Model

Applying a TRIZ-style Business Model Creation Framework

- Exploring the evolution system business model of the

"LCC (Low Cost Carrier) Model" -

Osamu Ikeda (NIKON CORP.), Hisataka Izawa (Sony Corp.),

Mamoru Ohashi (Hitachi Metals, Ltd.), Fumiko Kikuchi (Pioneer Corp.),

Yasuo Moriya (FUJITSU ADVANCED TECHNOLOGIES, LTD.),

Ikuo Yoshizawa (The SANNO Institute of Management)

Business and Management TRIZ Research Subcommittee (Japan TRIZ Society, NPO)

In this study group, I am working for the purpose of presenting spread and development of TRIZ to the subject of business, management, and the management field aiming at researches for utilizing TRIZ, such as the application method and case study, and guidance construction.

In the past activities, I applied TRIZ thinking and a technique, analyzed "a hot-selling product and service", and devised the fundamental framework of the creation method of a "new product and service" system. I showed the examination result here at the 9th TRIZ symposium (2013). In the shown fundamental framework, I have applied the evolution trend of a business management system of Darrell L. Mann's proposal. In the examination process here, I was effective in the evolution trend of a business management system, and acquired the necessity of making for the tool which moreover improves convenience. Then, I created a description as intelligible as possible about the contents of the definition of the evolution trend of a business management system and the contents of the definition of the evolution level of Darrell L. Mann's proposal. About this examination result, I showed at 10th TRIZ symposium (2014) with the practical use example.

At the 11th TRIZ symposium (2015), since the analysis tools (Contradiction Matrix, Inventive Principles and Evolution Trends, Evolution Levels, etc. of a management system) of the TRIZ style were about ready from the past activities, I

selected "the business model with a sufficient line" from all fields partly, and (reversely) analyzed the success factor by TRIZ style. Based on the circumstances of the past examination, we decided to perform the following examination this time:

1. Selecting a specific business model from "the business model with a sufficient line" which (reversely) analyzed the success factor by the TRIZ style.
2. With the application of the framework of TRIZ style business model creation, searching for a "future evolution system business model" to a specific business model.

J16 Shinsuke Kurosawa (Education of a New Era Research SC., JTS)

**Introduction of the Activities and Output Image
of the Syllabus Subcommittee**

Shinsuke Kurosawa (Education of a New Era Research SC., JTS / trizstudy.com)

The activities and the image of the output present in preparation of the Syllabus Subcommittee will be introduced.

J17 Shinsuke Kurosawa (TRIZ Juku)

**Different Creativity and Idea Generation Methods
and the Place of TRIZ among them**

Shinsuke Kurosawa (TRIZ Juku)

After some 20 year from TRIZ introduction to this country the Japanese TRIZ community has not been successful in establishing a common answer to the question “What is TRIZ?”. It is possible, of course, to introduce different features of TRIZ as did Altshuller himself. However, it does not help distinguish TRIZ among various classes of knowledge on thinking, people have accumulated to date,

The present paper analyses features of different methods of practical thinking including TRIZ and tries to find specific features of TRIZ through comparison with other methods.

The paper owes fundamental ideas to “A review of methods for creation of new technical solutions” (Обзор методов создания новых технических решений) written by Alexander Kudryavtsev in 1988. However the author is responsible for the conclusions from the comparison. The author tries to add methods that are more familiar to the Japanese to the analysis.

J18 Teruyuki Kamimura (Ideation Japan, Inc.)

Use of TRIZ Enhancing the Innovation Process

from Planning to Market Injection

Teruyuki Kamimura (Ideation Japan, Inc.)

As everyone knows, entering the 21st century, globalization progressed, and the degree to which an innovation influences the fate of a company increased. Developing (improvement in the speed and certainty) the innovation process (Planning => Development => Trial Production => Market Injection) will be a serious subject for many companies.

Until now, many case studies and methods of utilizing TRIZ turned to specific purposes, such as problem solving or invention improvement, etc. have been introduced, but, not much seems to have been introduced on how to utilize TRIZ in a set of innovation processes.

This presentation explains what part of TRIZ is utilizable in which stage, in order to develop a set of processes of Planning => Development => Trial Production => Market Injection.

J19 Takayoshi Ohtsu (National Institute of Technology, Numazu College)

**Development of Dietary Education Support Robot using TRIZ
- Understanding the Relation of Color and Nutrition -**

Takayoshi Ohtsu (National Institute of Technology, Numazu College)

From food safety and a viewpoint of improving health, development of children-oriented dietary education teaching materials is desired. Therefore, I tackled the development of dietary education teaching materials by cooperation with Fuji City. In order to maintain the balance of nutrition, the classification of principal food - side dish – main dish - dairy products and dietary education contents which can be understood with the concern about foods are needed. So, understanding the local characteristic and its problems with brainstorming and KJ method, I developed a 3D block robot "Musubin", the Fuji City dietary education character, and food education contents using it by exploring solutions using TRIZ. Performing verification in a kindergarten, I associated the color and nutrient of food and the motion of the robot, sound and light, enabling to raise the concern to food by discovering its regularity.

J20 Yasuo Moriya (FUJITSU ADVANCED TECHNOLOGIES LIMITED)

**Recycling Resources by TRIZ Way of Thinking!
From Technical Problem Solving to New Business Deployment**

- Reducing 2,400 Million Yen Cost Simply with TRIZ -

Moriya Yasuo, Toru Okada (FUJITSU ADVANCED TECHNOLOGIES LIMITED)

The application stage of TRIZ in a company is positioned in the upper stream in manufacturing or a service examination process, and it is the present condition which cannot accept value as the application effect easily with the quality in the product and service offer stage to a customer, performance, and sales. However, the starting point of "kotozukuri" is asked for the high quality way of thinking.

In order to solve this time the abandonment problem of a poor printed circuit board that authors were faced, in the TRIZ way of thinking, we realized the way which attains a technical subject and developed to the plan of new business. By repairing the technical establishment and reuse of a printed circuit board, we have avoided disposal of the printed circuit board of a total of 290,000 sheets in about five years, and effective use of resources realizes an about 2,400 million yen cost cut. I will introduce the example connected to a new business plan.

J21 Takashi Shikata (JTS Open Task Subcommittee)

**Introduction and Explanation of Example Solutions
to the Open Task for this Symposium,
And Commendation**

**Tomohiko Katagiri, Hideaki Kosha, Takashi Shikata,
Shigeru Hisanaga, Ikuo Yoshizawa
(JTS Open Task Subcommittee)**

[Educational Research Subcommittee of a New Era (Japan TRIZ Society, NPO)]

- Step 1: Introduction of your ideas
- Step 2: Introduction of suggested answers
- Step 3: Prize description and announcement
- Step 4: Commendation

J22 Yuichi Kawano (Soyu Co., Ltd.)

TRIZ Application Art for Problem Solving

Yuichi Kawano (Soyu Co., Ltd.)

Our company is called Soyu Co., Ltd.. We have been allowed to carry out proposed type technical cooperation for solving design problems, the subject on production technology, etc. on the occasion of the customer's development and design case, and, finally have also accepted mass-production trust. We have obtained the edge of the case of various type-of-industry industries, and have granted their kind consideration. In the recent years, especially the customer's design environment and development demand needs after the Bankruptcy of Lehman Brothers are carried out in a big change. In the operating promotion in the conventional design development, such as reduction of working hours for development to design development staff's reduction, and new product releases, small-quantity various kind deployment, competition new entry from other fields, and a sharp fall of the yen, we who actually touch a customer also recognize that the development and the presentation selection of the earlier exact solutions of a design subject which are necks are important with a feeling of skin. Our company has obtained evaluation under such environment as a partner capable of small sharp turns. We have decided on introduction of TRIZ in order to build further "production technology reservation to embody" of "an early positive technical solution proposal" and after that so that it may match with the situation needs of the design development staff who becomes increasingly severe.

Here, I will report on the partial example what kind of output to have presented, to the input which obtained the design subject from a customer.

J23 Naoto Kashihara (TOYO TIRE & RUBBER CO., LTD.)

An In-company Innovation Promotion Activity Utilizing QFD-TRIZ

- Towards the Base Construction of a "surprise" Tire Product Development and an "innovative" Technical Development Capacity -

Naoto Kashihara (TOYO TIRE & RUBBER CO., LTD.)

TOYO TIRE is pursuing every day "development which reverses unique imagination, the technical capabilities of innovation, and common sense" by making into a catchphrase "whether for surprise to be in the tire" aiming at the product development which continues being provided with customer delight (CD).

While the fixed result was obtained from 2012 in business solution power or the viewpoint of the improvement in creativity by promoting the in-company innovation activity which utilized QFD-TRIZ, the subject that target QCD balance is not easily materialized in commercialization, and it is hard to link it directly with it has become clear.

In tire product development full of technical inconsistencies, we recognized the importance of the "cause analysis" which is a process before TRIZ, and the "idea conclusion" which is the post-process, and we built the base of the innovation activity which was linked with commercialization directly by solution tool introduction devised uniquely.

In this presentation, by introducing a part of the solution theory to the subject which was faced on in-company promotion, I hope to prevail TRIZ which can be practically used at the place of product development.

J24 Takuji Yamamoto (Shinwa Controls Co., LTD.)

Strengthening the Development Regime

by Introduction of a Development Method

Experience of QFD, TRIZ and Seeds-driven QD

Takuji Yamamoto, Koji Matsuda (Shinwa Controls Co., LTD.)

For the purpose of strengthening the development capacity in the company, we have tackled introduction of methods such as QFD, TRIZ and Seeds-driven QD. We think that we have obtained 3 points from these methods. The 1st point is "Establishment of organizational development system", the 2nd point is "Change from dependence to <<intuition and experience>> to <<practical use of the exhibited knowledge>>" and the 3rd point is "Efforts of strategic development activities." Being busy with daily development operation and not being able to make efforts spending sufficient time for technical tradition, it can be said that we were able to build an organizational development system efficiently by acquiring these methods.

J25 Masahiro Hayashi (Kyowa Co., Ltd.)

Problem Solving and Product Planning with QFD-TRIZ (2)

Masahiro Hayashi (Kyowa Co., Ltd.)

Kyowa Co., Ltd. has 165 employees and sales of about 2 billion yen building a production base on the basis of the wonderful natural environment of the foot of Minami-Alps, Ina Valley in Nagano Prefecture. We are dealing with the design and manufacture of electromagnetic brakes for safety, medical equipment, semiconductor and cutting of the parts for liquid crystal manufacture equipment. Especially the electromagnetic micro clutches and brakes are custom-made products corresponding to the customer's needs, and we are doing our best every day based on the customer's request to be able to propose the ideal product under the core designing/design.

However, when aiming at a development company of a further in-depth proposal-type product, the fact was that we also felt the limit of the traditional system.

In such a situation, IDEA Inc. introduced us a systematic development method for proposal-type products coordinating application of QFD-TRIZ, which happened to coincide with a time when we received an inquiry matter for an electromagnetic brake in a new field, therefore, we synchronized the actual development matter with the systematic development method last fiscal year, and carried out a new product development in a style where we learned while running and practiced while learning.

This presentation will report the present situation of that of last year, and the contents of our efforts for new developments.

J26 Narumi Nagase (Sony Corp.)

Reconsideration of inventive problem solving by TRIZ

— Proposal of “Reverse TRIZ” —

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The inspiration comes up in a moment. It is difficult to have an inspiration in scheduled manner. It is tough to control because it is also influenced from the people's individual experiences.

Therefore, the inspiration is not always successfully coming out even following someone's success.

It's difficult, but everyone wants inspiration. Many teams carry out a brainstorming session using integrated way of thinking and framework for it. Many people request the same result to using TRIZ.

We also have utilized several frameworks effectively using TRIZ to inspire the idea.

However, we found more than one cases which have big difference in between the information generating a patent invention and the information generating an inspiration.

Based on these facts, we checked again the logic of “inventive problem solving by TRIZ”. In this paper, we completed the result of our works into a thinking process named “Reverse TRIZ”.